CLAIMS:

1. A holographic data storage medium including an anti-reflective coating on a surface of the medium, wherein the anti-reflective coating causes the medium to have less than 1.0 percent reflectivity of S-polarized light at incident angles greater than approximately 50 degrees relative to a line normal to the surface of the medium.

2. The holographic data storage medium of claim 1, wherein the anti-reflective coating causes the medium to have less than 1.0 percent reflectivity of S-polarized light at an incident angle of approximately 60 degrees relative to a line normal to the surface of the medium.

3. The holographic data storage medium of claim 2, wherein the anti-reflective coating causes the medium to have less than 0.5 percent reflectivity of S-polarized light at an incident angle of approximately 60 degrees relative to a line normal to the surface of the medium.

4. The holographic data storage medium of claim 3, wherein the anti-reflective coating causes the medium to have less than 0.25 percent reflectivity of S-polarized light at an incident angle of approximately 60 degrees relative to a line normal to the surface of the medium.

5. The holographic data storage medium of claim 1, wherein the anti-reflective coating causes the medium to have less than 1.0 percent reflectivity of S-polarized light at incident angles relative to a line normal to the surface of the medium greater than or equal to approximately 10 degrees and less than or equal to approximately 60 degrees.

6. The holographic data storage medium of claim 1, wherein the anti-reflective coating has greater than approximately 95 percent transmittance for the S-polarized light.

7. The holographic data storage medium of claim 1, wherein the anti-reflective coating is a multi-layer stack.

8. The holographic data storage medium of claim 7, wherein each layer of the multi-layer stack is an oxide layer.

9. The holographic data storage medium of claim 1, wherein the S-polarized light comprises S-polarized light having a wavelength of approximately 405 nanometers.

10. The holographic data storage medium of claim 9, wherein the anti-reflective coating includes:

a first layer comprising Ta_2O_5,

a second layer comprising Al_2O_3,

a third layer comprising Ta_2O_5, and

a fourth layer comprising SiO_2.

11. The holographic data storage medium of claim 10, wherein:

the first layer has a thickness of approximately 83.3 nanometers,

the second layer has a thickness of approximately 96.8 nanometers,

the third layer has a thickness of approximately 42.0 nanometers, and

the fourth layer has a thickness of approximately 75.0 nanometers.

12. The holographic data storage medium of claim 1, wherein the S-polarized light comprises S-polarized light having a wavelength of approximately 532 nanometers.

13. The holographic data storage medium of claim 12, wherein the anti-reflective coating includes:

a first layer comprising approximately 80 percent by weight ZnS and approximately 20 percent by weight SiO_2,

a second layer comprising $SiO_{[X]}N_{[Y]}$, wherein X is a rational number between approximately 0 and 2 and wherein Y is a rational number between approximately 0 and 1.33,

a third layer of comprising approximately 80 percent by weight ZnS and approximately 20 percent by weight SiO_2, and

a fourth layer comprising SiO_2.

14. The holographic data storage medium of claim 13, wherein:

the first layer has a thickness of approximately 108 nanometers,

the second layer has a thickness of approximately 133 nanometers,

the third layer has a thickness of approximately 55 nanometers, and

the fourth layer has a thickness of approximately 99 nanometers.

15. The holographic data storage medium of claim 13, wherein a value of the sum of X/2 and Y/1.33 is approximately equal to 1.0.

16. The holographic data storage medium of claim 1, wherein the medium has a sandwich construction in which a photopolymer is sandwiched between two substrates, and wherein the anti-reflective coating on the surface of the medium comprises an anti-reflective coating of an outer surface of one of the substrates.

17. The holographic data storage medium of claim 16, further comprising anti-reflective coatings on outer surfaces of both of the substrates.

18. A holographic data storage system comprising:

a laser that produces at least one laser beam;

optical elements through which the laser beam passes;

a holographic recording medium including an anti-reflective coating on a surface of the medium, wherein the anti-reflective coating causes the medium to have less than 1.0

percent reflectivity of S-polarized light at an incident angle greater than approximately 50 degrees relative to a line normal to the surface of the medium; and

a data detector that detects a hologram reconstructed when the laser beam illuminates the holographic recording medium at an incident angle greater than approximately 50 degrees relative to a line normal to the surface of the medium.

19. A method comprising:

forming an anti-reflective coating on a holographic data storage medium to limit reflectivity of S-polarized light at incident angles greater than approximately 50 degrees relative to a line normal to the surface of the medium to less than approximately 1.0 percent.

20. The method of claim 19, further comprising forming the anti-reflective coating such that transmittance of the coating is greater than approximately 95 percent.

21. The method of claim 19, further comprising:

storing a hologram in the holographic data storage medium using a laser beam directed toward the holographic data storage medium at an incident angle greater than approximately 50 degrees relative to a line normal to the surface of the medium.

22. The method of claim 19, further comprising:

reconstructing a hologram stored in the holographic data storage medium using a laser beam directed toward the holographic data storage medium at an incident angle greater than approximately 50 degrees relative to a line normal to the surface of the medium.